

Investigation of *in-situ* Surface Cleaning of Cu Films Using O₃/O₂ and N₂H₄

Su Min Hwang¹, Aswin L. N. Kondusamy¹, Qin Zhiyang¹, Harrison S. Kim¹,
Luis Fabián Peña¹, Kui Tan¹, Jean-Francois Veyan¹, Daniel Alvarez², and Jiyoung Kim^{1*}

¹Department of Materials Science and Engineering, The University of Texas at Dallas,
TX 75080, United States.

²Rasirc Inc., San Diego, CA 92126, United States.

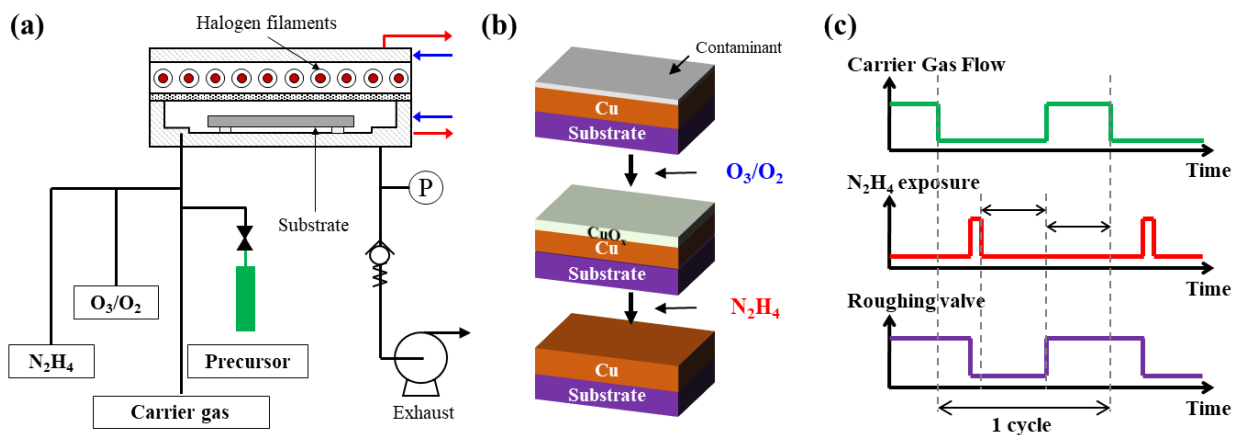


Figure 1. Schematic of (a) RTALD system, (b) Process sequence, and (c) representative time sequence of stop valve process

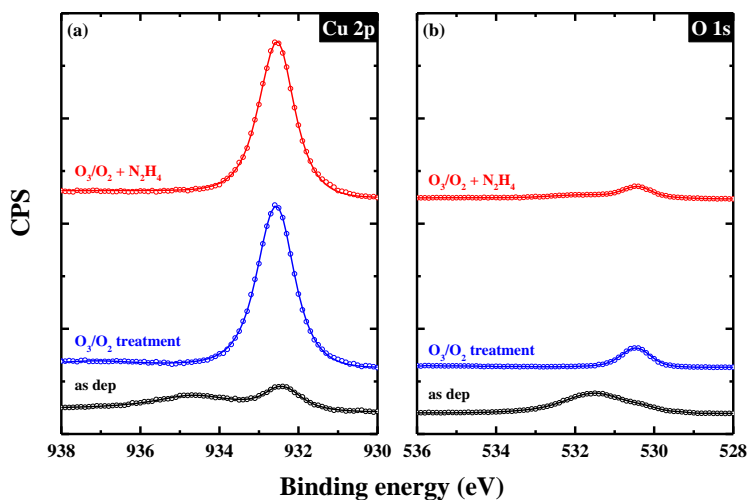


Figure 2. XPS elemental scans of (a) Cu 2p and (b) O 1s for different Cu samples.

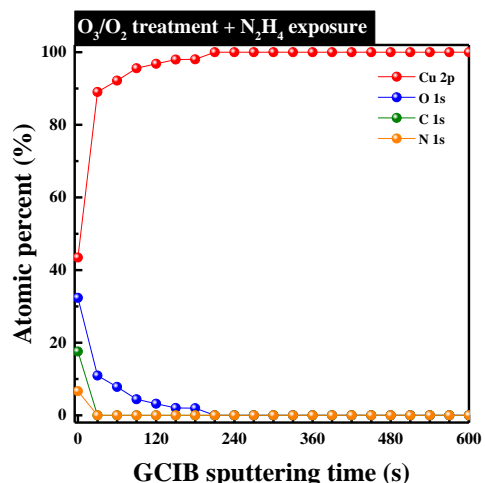


Figure 3. Elemental composition of Cu sample treated with O₃/O₂ and N₂H₄ as function of GCIB sputtering time.